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Site and Community at Chunchucmil and Ancient Maya Urban Centers

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Classic Period lowland Maya urban centers often lack sharp boundaries due to progressive dispersal of residential settlement. This dispersal gives rise to questions about the concept of site and the notion of community affiliation. Research on settlement patterns at Chunchucmil, an urban center in NW Yucatan, Mexico, dating to the 5th and 6th centuries A.D., explores the issue of site boundaries and the social and economic implications of such boundaries. Detailed mapping, test pitting, and reconnaissance reveal that Chunchucmil had three densely occupied, concentric, contemporaneous zones of settlement covering between 20 and 25 sq km and inhabited by a population of up to 42,500. Data from both within and beyond the density thresholds marking the edge of the city imply the existence of communities whose boundaries do not always follow those of the site. A portion of the hinterland settlement close to the edge of the city shows stronger economic and social connections with the city. These connections enable the delineation of Greater Chunchucmil, extending 5 km from Chunchucmil's center. The work at Chunchucmil also allows comparison with other large Maya cities that have been systematically documented. This comparison highlights considerable variability in Maya urban forms and how these cities relate to their peripheries. Text starts about 2p6 below abstract.

Introduction

For thirty years, the Classic period urban center of Chunchucmil (FIG. 1) has been recognized as one of the largest and most densely populated sites on the Yucatan Peninsula (Vlcek, Garza, and Kurjack 1978; Kurjack and Garza 1981). As we present below, the Pakbeh Regional Economy Program (PREP), initiated in 1993 by Bruce Dahlin, has determined that the site was even larger—demographically and spatially—and more densely occupied than originally suggested. In this paper, we present the findings of 10 seasons of settlement pattern research at the site and use these findings to explore the concept of "urban community" as it applies to the ancient Maya. The notion of urbanism has been contentious for the Classic period Maya Lowlands, partly because of a well-documented tendency toward residential dispersion (Drennan 1988; Freidel 1981; Sanders 1981; Sanders and Price 1968). Such dispersion often results in a lack of clear site edges, thus underlining the fact that "site" and "community" are not always the same thing (Kolb and Snead 1997; Yaeger and Canuto 2000).

We begin by discussing residential dispersion and critiques of the concept of site, then discuss our field meth-

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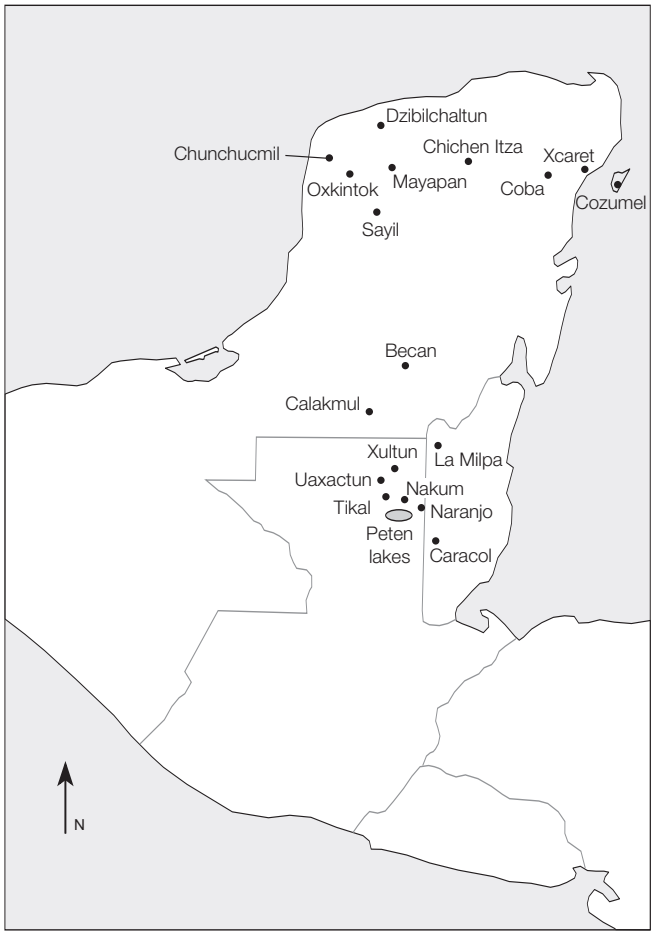

Figure 1. Map showing location of Chunchucmil and other sites mentioned in the text.

ods and analyze the results. We focus particularly on recently completed transects that extend well beyond the Chunchucmil site center. Our results allow us to distinguish three zones of urban settlement, including the site center, a residential core, and a residential periphery. Beyond this periphery is an area of much more dispersed settlement; this threshold can be conceived of in many different ways. Is this area of light settlement the edge of the site? Is it part of the urban community or is it an aggregate of small, autonomous rural communities? These questions target the social side of settlement pattern studies (Ashmore 2003: 7) and require us to consider multiple notions of community. These questions also focus attention on appropriate methods for determining the edges of an urban center when such centers are not surrounded by empty space.

Based on the distribution of obsidian and features of the built environment salient to the ancient inhabitants, we divided the dispersed area beyond urban Chunchucmil into an inner hinterland, called Greater Chunchucmil, and an outer hinterland (cf. Marcus 1983, 2000). Greater Chunchucmil was linked with Chunchucmil by economic interactions and by embodied material practices that established imagined communities (Anderson 1991; Isbell 2000) which crosscut the spatial boundary between the site and its inner hinterland. In other words, we find a "continuity of place" over a disaggregation of space (Joyce and Hendon 2000: 144). We conclude by comparing Chunchucmil's site structure to that of other large Maya centers. This comparison reiterates the broad variability in Maya urban layouts, reflecting different underlying social, political, and economic organizations.

Background

Maya Urbanism and Residential Dispersion

Sylvanus Morley was one of the first archaeologists to comment on the boundaries of large sites in the Maya Lowlands (Rice and Culbert 1990). In 1923, Morley announced that "occupation of the land between the different large centers, like Tikal, Uaxactun, Xultun, Nakum, Naranjo, etc. must have been partially continuous" (1923: 272). He wrote this after seeing a 3 sq km *milpa* (cleared maize field) with abundant archaeological remains located far away from the nearest monumental architecture (Schufeldt 1950). William Bullard's (1960) trailside survey of the NE Petén, Guatemala, gave credence to Morley's statement. Bullard argued that settlement beyond large centers with monumental architecture was denser than settlement adjacent to such centers—178 mounds per sq km at a cleared strip of land well beyond any monumental centers versus 82 structures per sq km at Uaxactun (Ricketson and Ricketson 1937). Bullard's conclusion supported the conventional wisdom that clusters of temples and plazas were merely ceremonial because they did not have residences densely packed around them. In concordance with Evan Z. Vogt's (1968) ethnographic observations of settlement in highland Chiapas, these "vacant" ceremonial centers formed a key component of a widely held interpretation of ancient Maya society as non-urban, dispersed, and more or less egalitarian (Willey 1956).

Shortly after Bullard's survey, mapping projects at Tikal and Dzibilchaltun revealed that the density of residential settlement adjacent to the temple and plaza complexes was so high as to be incompatible with the "vacant ceremonial center model" that underpinned Bullard's interpretations. New studies also demonstrated that Bullard overestimated the density of rural settlement in the Petén. For example, Dennis Puleston's (1974) systematic survey of 15.12 sq km of rural area beyond Tikal revealed a structure density of 39

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mounds per sq km, well below Bullard's figure of 178 mounds per sq km. In concordance with Puleston's results, Don and Prudence Rice's (1990) systematic survey of 30 sq km of rural space around the Petén lakes revealed a structure density of 48.8 structures per sq km. Thus, lowland Maya settlement patterns exhibit nucleation, in the sense that residential settlement tends to cluster more densely around large ceremonial complexes than in areas without such complexes. This high density, as well as the presence of heterogeneous populations and centralized political, administrative, communicative, and religious functions, have led archaeologists to label sites like Tikal, Caracol, and Dzibilchaltun as urban (Chase, Chase, and Haviland 1990; Cowgill 2004; cf. Sanders and Webster 1988; Webster and Sanders 2001).

Nevertheless, residences in Classic period lowland Maya urban centers (see also results of survey in La Mixtequilla, Veracruz; Stark 1999) are noticeably more dispersed than in highland Mexican urban centers (Sanders and Price 1968; for causes of residential dispersion, see Drennan 1988; Freidel 1981; Sanders 1981; Stark 1999). Sites in the northern Lowlands tend to be more compact than sites in the southern Lowlands (Drennan 1988) but this does not imply that site edges are always clear. Archaeologists mapping the northern Lowland ruins of Sayil noted that in some directions, such as to the west (toward Chac II), settlement was continuous (Killion et al. 1989; see also Dunning 1988). After defining a site as a cluster of architecture bounded by a discrete and continuous zone of vacant land, Gair Tourtellot and Jeremy Sabloff (1994: 78–79) declared, tongue in cheek, that the whole Puuc Hills region might be considered one site.

Site Boundaries

The problem of defining site edges was first recognized in areas where surface visibility is sufficient to enable full coverage surveys, a rarity in the Maya lowlands due to the heavy vegetative coverage. To quote William Sanders, Jeffrey Parsons, and Robert Santley's report on a full coverage survey in the Basin of Mexico,

> one of our basic expectations was that a human settlement would be physically coherent: a fairly discrete cluster of archaeological remains surrounded by a large amount of empty space. In general this assumption was correct, and sites could be easily defined throughout our survey area. There were, however, a few exceptions, and we still do not know how to deal with some of these (1979: 16).

Surveyors in the Valley of Oaxaca handled this problem by stipulating that archaeological remains recorded in the field could only be considered a unique site if they were surrounded by at least 100 m of empty space (Blanton et al. 1982: 10; Kowalewski et al. 1989: 27). In their discussion of survey methods in the American Southwest, Stephen Plog and colleagues (1978) did not use bounding by open space as the criterion for determining whether or not a site was discrete. Rather, they used relative changes in density of cultural remains (artifacts, ecofacts, features). Residential dispersion makes such density thresholds appropriate for many Maya case studies.

Plog, Plog, and Wait (1978) and others (Peterson and Drennan 2005) recognize that such thresholds can vary among projects and regions. As Robert Dunnell (1992) notes, if the criterion for identifying a site is allowed to vary among projects, two archaeologists using different threshold densities might survey the same area and "find" a different number of sites. This led Dunnell to point out that, contrary to the way most archaeologists conceive of them, sites are not real things waiting to be found. Rather, archaeologists create sites through their methods of observation. Though we see the logic of Dunnell's comments, we think he has overstated the consequences of his critique. Simply because sites are partially created by archaeologists does not mean they are fictional (Peterson and Drennan 2005). In general, as Sanders, Santley, and Parsons noted (1979), few sites are methodologically difficult to distinguish. As Plog, Plog, and Wait (1978: 388) point out, these difficult cases are generally at the "trailing edge" of the spectrum, where archaeological materials are sparse and diffuse. As a compact cluster of contemporaneous settlement (see below), Chunchucmil is not at the trailing edge of the spectrum. Because of residential dispersion, however, Chunchucmil does have sparse and diffuse settlement off of its edges. Though we will exclude this settlement from the site of Chunchucmil, we recognize that communities may crosscut site boundaries.

Communities

William Isbell (2000: 243) argues that "the importance of 'community' as a tool for investigation is not matched by its clarity or unambiguous use." He implores archaeologists to eliminate ambiguities in their use of the concept. This ambiguity undoubtedly stems from the fact that different anthropologists employ different notions of community. Jason Yaeger and Marcello Canuto (2000) classify these notions into four approaches: functional (people linked by, for example, economic interdependence), historical (community molded by external forces such as colonialism), conceptual (imagined communities), and interactional (created by face to face contacts and other practices). The site of Chunchucmil cannot be considered a single community in any of these senses. Nevertheless, our settlement data enable us to discuss functional communities, in-

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teractional communities, and imagined communities. We envision Greater Chunchucmil (the site plus its inner hinterland) as an imagined community.

The idea of imagined communities was developed as a way of approaching shared identities that have little or no basis in face to face interactions. One of the first and clearest examples used by Benedict Anderson (1991) to illustrate what binds imagined communities was mass media. Anderson shows how newspapers and novels can foster a sense of community among readers who will never interact with each other. Such media accomplish this by mentioning places with which the reader is familiar, so that the reader recognizes her place in what she is reading. The reader is drawn into and feels connected to a community whose members are too numerous for her to ever meet. In the absence of data on mass media, we develop a notion of imagined community that is based in the embodied experience of living in a dense city. As we make clear, some of these experiences may never reach the discursive level of imagination.

Methods

Settlement archaeology at Chunchucmil consisted of four components: mapping, transect survey, test pitting, and regional survey. After spending three seasons on regional reconnaissance, we began work on the site map in 1996, with the goal of covering 16 sq km, similar to the 16 sq km map of Tikal (Carr and Hazard 1961) and the 19 sq km map of Dzibilchaltun (Stuart et al. 1979). Slowed by the unprecedented density of settlement, an abundance of features, and patches of almost impenetrable secondary growth, we completed 9.4 sq km (FIG. 2). Though this is only half the size of the Dzibilchaltun map, it should be noted that at Chunchucmil every *mecate* (20 m × 20 m block) was fully explored (cf. Kurjack 1974: 80) and some features present but not mapped at Dzibilchaltun were fully mapped at Chunchucmil.

The second component consisted of five mapping transects, four of them 300 m wide and the fifth 200 m wide, that extended beyond the central 9.4 sq km (FIGS. 3, 4). The five transects include four cruciform transects oriented at approximately 45 degrees off the cardinal directions, and a fifth transect placed opportunistically alongside a modern road running eastward in the direction of Oxkintok, a large site 27 km away. The area mapped by these transects is 2.37 sq km, bringing the total size of Chunchucmil's mapped area to 11.77 sq km. The northwest transect (0.48 sq km) is 1.6 km long (beyond the fully mapped central portion), extending to a distance of 3.47 km from the site center datum. The northeast transect (0.54 sq km) measures 1.8 km long, extending to a distance of 2.94 km from the site center datum. The southeast transect (0.60 sq km) is 2 km long, extending to a distance of 3.97 km from the site center datum. The southwest transect (0.18 sq km) is 0.6 km long, extending to a distance of 3.35 km from the site center datum. The east transect (0.57 sq km) connects to a cluster of mounds, named Kocholito, on a 0.6 × 0.5 km milpa that had been mapped earlier. When combined, the mapped milpa and east transect are 1.9 km long, extending to a distance of 2.95 km from the site center datum.

We conducted test excavations, the third component of our methods, in a 13% representative sample of the 1250 architectural compounds mapped. Test pits, consisting of 841 discrete units, tested off-mound middens in order to establish the chronology of occupation, detect potential ethnic enclaves, identify specialized production, and reveal patterns in consumption of local and long distance goods.

The final component consisted of regional surveys of neighboring sites. Though the major goal of this survey was to identify and document sites beyond Chunchucmil, the survey was also intended to supplement our knowledge about Chunchucmil's site boundaries (Hixson 2005). Aspects of the regional survey germane to Chunchucmil's site limits included remote sensing coupled with non-systematic ground-truthing and mapping of mound clusters to the northeast and southwest of the contiguous 11.77 sq km map. Test pits and/or surface collections were completed in an attempt to acquire samples of artifacts from all surveyed sites.

Results

Our research established three unequivocal zones of settlement: the site center, the residential core, and the residential periphery. The question of how to conceptualize dispersed settlement beyond the residential periphery, however, engendered a lively and long-running debate. Though resolving this debate will require new evidence, the data from our excavations and regional surveys give us a provisional understanding of what is at the edge of Chunchucmil and how it can be understood in social terms. We begin by discussing the site center and advance progressively to the edge of the site, the admittedly conditional territory that is the focus of this paper.

Zone 1: The Site Center

The site center contains a 1 sq km cluster of temple complexes, streets, causeways, the site's only ballcourt, and a marketplace. A digital elevation model from NASA's airborne synthetic aperture radar system (AIRSAR) demonstrates that nearly all large architecture in a 2000 sq km area is contained within this 1 sq km at the core of

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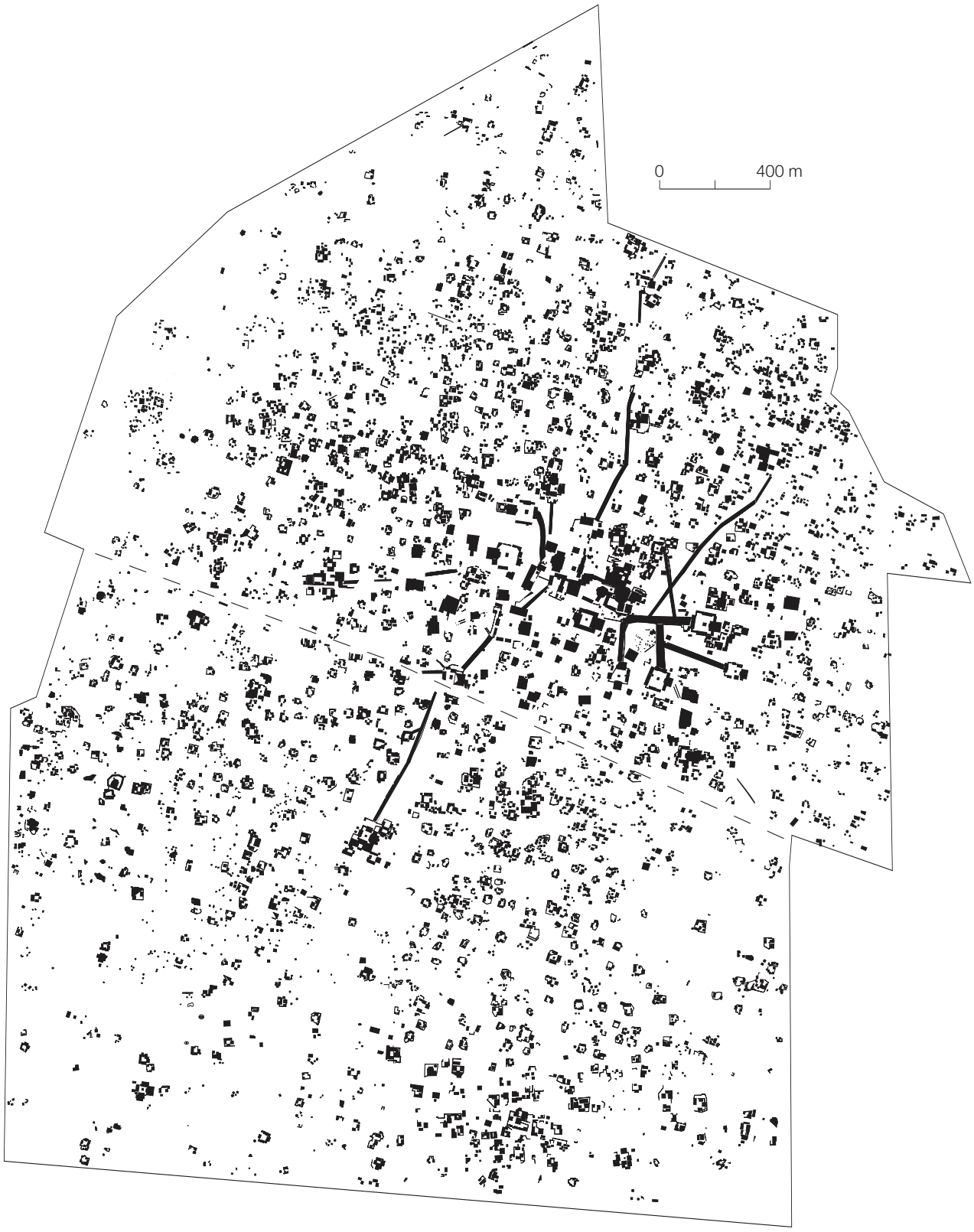

Figure 2. Map of Chunchucmil, covering 9.4 sq km. The dotted line at the center represents a modern paved road.

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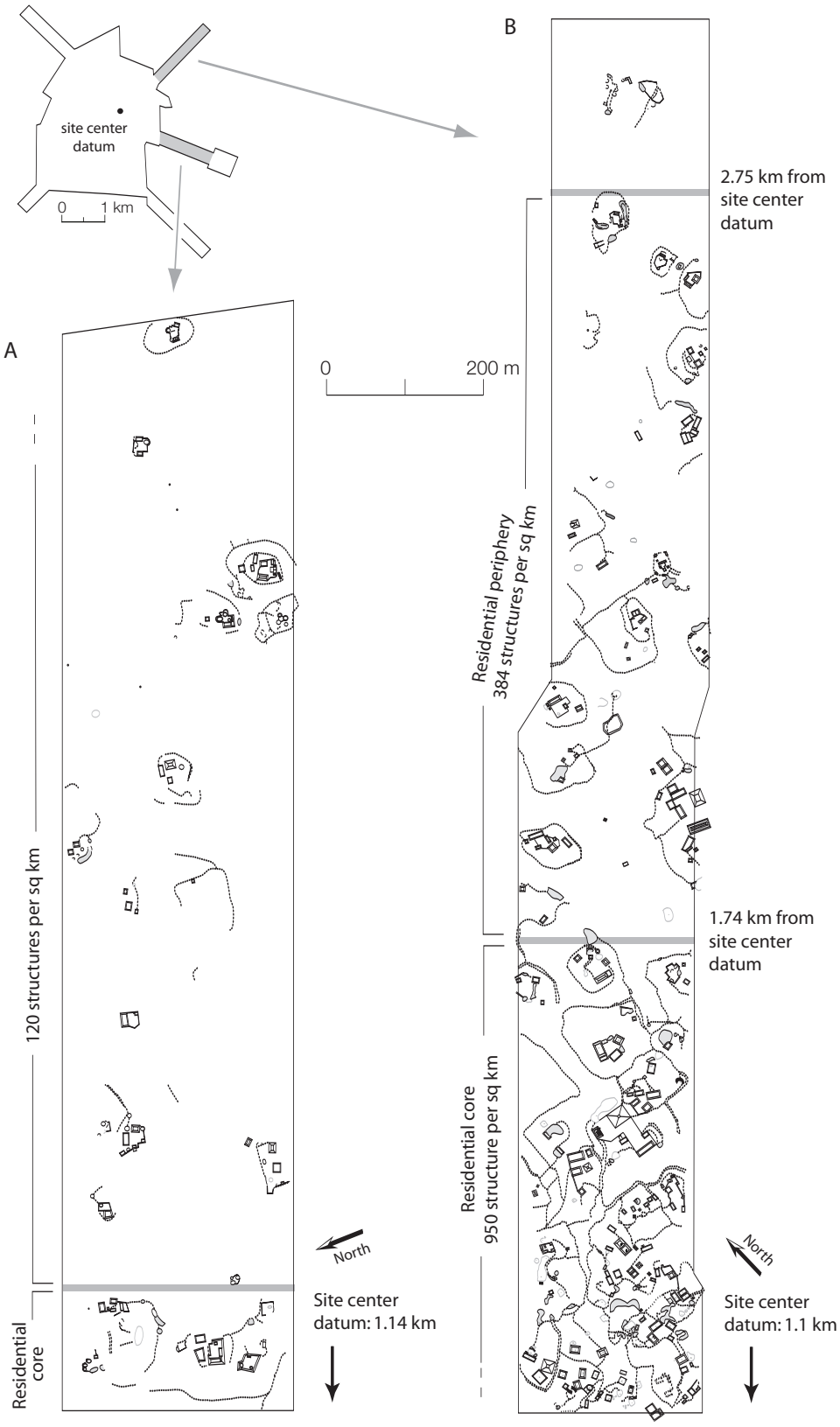

Figure 3. Maps of the A) East transect; and B) Northeast transect. The illustration in the upper left corner shows the location of transects relative to the general site map in Figure 2.

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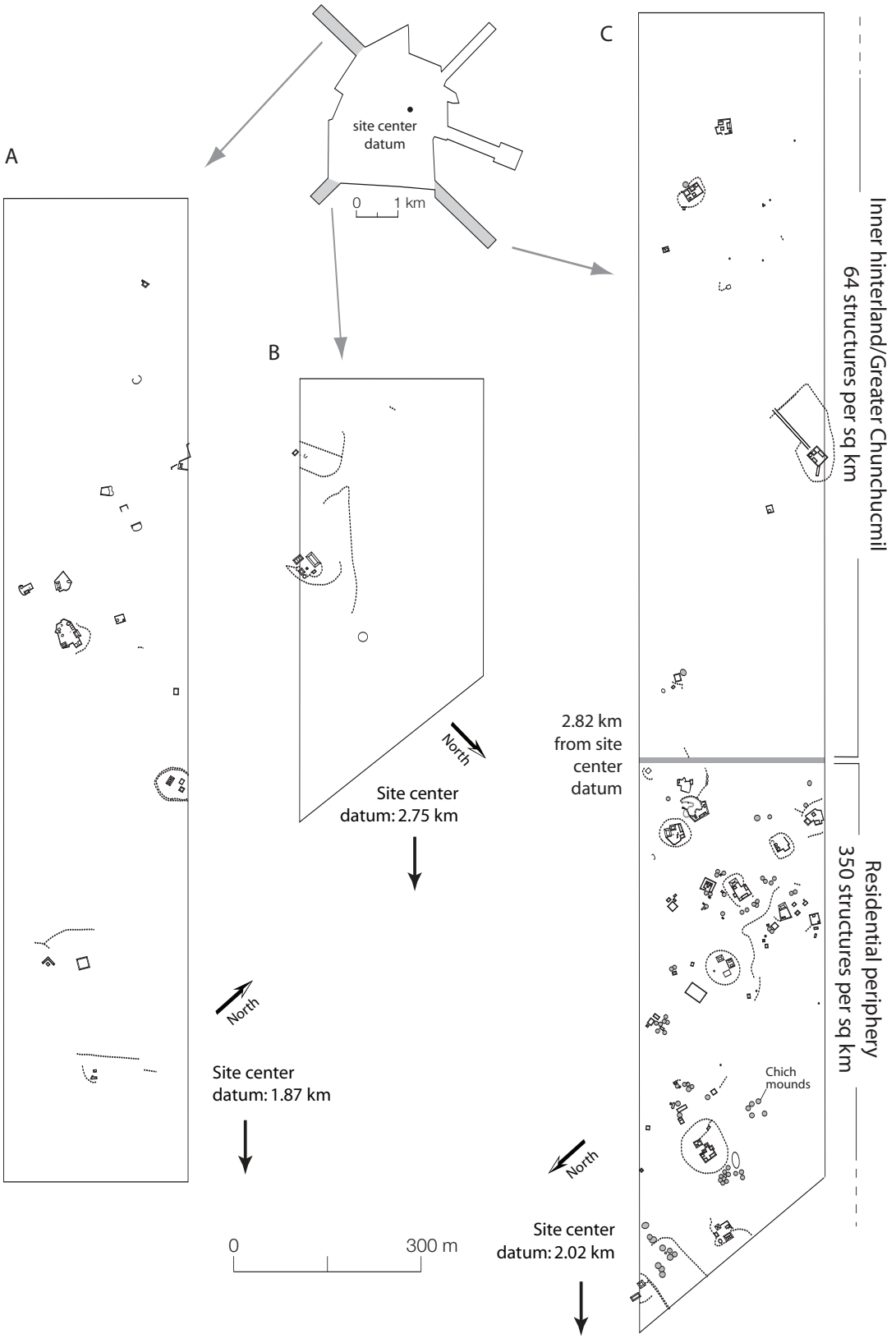

Figure 4. Maps of the A) Northwest transect; B) Southwest transect; and C) Southeast transect. The illustration at the top shows the location of transects relative to the general site map in Figure 2.

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Chunchucmil and no pyramids higher than 8 m are found beyond 2 km of Chunchucmil.

Figures 5 and 6 illustrate both the site center and portions of the residential core. Since the site center has been described elsewhere (Dahlin in press; Dahlin and Ardren 2002), we present only highlights here. Due to the fact that the temple complexes are connected by causeways and each has the same configuration—a square patio with a pyramid (ranging between 8 and 17.5 m tall) usually on the east side, long 2 m high platforms on the other three sides, and a lower square platform in the center—we group them into a category called "quadrangle" (Andrews 1985). Our site center datum is in the middle of the largest causeway, located 60 m from the site's largest pyramid, which is adjacent to the ballcourt. Based on diagnostic ceramics recovered from test pits, all of the quadrangles were built in the Early Classic period, most likely the latter part, though in some quadrangles occupation continued into the first part of the Late Classic. Figure 5 shows a stone barricade encircling most of the site center. The barricade was built no earlier than the Late/Terminal Classic which means that much of the architecture enclosed by it may have been abandoned when it was constructed (Dahlin 2000).

Zone 2: Residential Core

Since the dense domestic settlement of the residential core engulfs some of the causeways and larger architecture, the boundary between the site center and the residential core is fuzzy. Otherwise the residential core is dominated by houselots: groups of small platforms usually facing a patio and surrounded by dry-laid stone walls called *albarradas.* Albarradas that encircle houselots are also found at sites such as Mayapan, Cobá, and Becan. These are distinct from the field walls common on the east coast of Yucatan at sites such as Cozumel and Xcaret. Chunchucmil's houselots bunch together like the cells of a honeycomb, clearly visible in the northeast and south/southeast portions of Figure 5. Houselots are also visible in an aerial photograph in the bottom portion of Figure 6. Narrow alleyways delineated by parallel albarradas constitute the only spaces between houselots. Such alleyways are extremely rare during the Classic period, though Postclassic sites in Yucatan and Quintana Roo, such as Mayapan and Tancah, do contain them. Intensive excavations within five houselots in this zone (and one houselot within the next zone, the residential periphery) revealed that most were multiple family compounds with ancestor shrines (Hutson, Magnoni, and Stanton 2004; Hutson et al. 2006). Diagnostic ceramics from test pits in 119 additional houselots from all areas of the site show that these houselots were occupied during the late part of the Early Classic, contemporaneous with the quadrangles. Most houselots were occupied only during this period. Settlement density in the residential core is 950 structures per sq km.

A drop in settlement density to about 350 structures per sq km marks the edges of the residential core. This drop in density is visible in Figure 2 near the south, west, and north edges of the map. To the east, settlement density at the beginning of the transect (FIG. 3A) is 366 structures per sq km, which means that the extent of the residential core has already been reached at the beginning of the transect, which is 1.14 km from the site center datum. On the northeast transect (FIG. 3B), settlement density drops from 925 structures per sq km to 384 structures per sq km at a point 600 m from the beginning of the transect. This point is 1.74 km from the site center datum. Adding these two measurements to the other known distances between the site center datum and the edge of the residential core gives an average of 1.65 km. Given that the area of a circle with a radius of 1.65 km is 8.57 sq km, the area occupied by Chunchucmil's first two zones approximates 8.5 sq km. We do not assume that the residential core or any other zone is a perfect circle.

Zone 3: Residential Periphery

Houselots encircled by stone albarrada walls dominate the residential periphery, just as in the residential core, but in the periphery, alleyways are rare, open space is abundant, and settlement density—350 structures per sq km—is nearly a third of that in the residential core. A drop to between 67 and 39 structures per sq km, a density equivalent to areas labeled "intersite" in other surveys (Rice and Rice 1990), marks the edges of the residential periphery. This drop is most clearly visible on the southeast transect. The map of this transect (FIG. 4C) reveals a continuous string of structures for the first 800 m and then a drop in settlement density from 350 structures per sq km to 64 structures per sq km at 2.82 km from the site center datum.

The entire 1.6 km northwest transect (FIG. 4A) with a density of 64 structures per sq km, is beyond the residential periphery. The edge of the periphery in this direction is 1.87 km out from the site center datum. The entire 0.6 km southwest transect (FIG. 4B) is also beyond the residential periphery. This transect contains only one houselot, yielding a density of 39 structures per sq km. If five questionable features not shown on the transect map are considered structures, the density rises to 67 structures per sq km. Thus, the edge of the residential periphery occurs no further out from the site center than the beginning of the transect, which is 2.75 km from the center.

On the northeast transect (FIG. 3B), the middle segment has a density of 384 structures per sq km, which is typical

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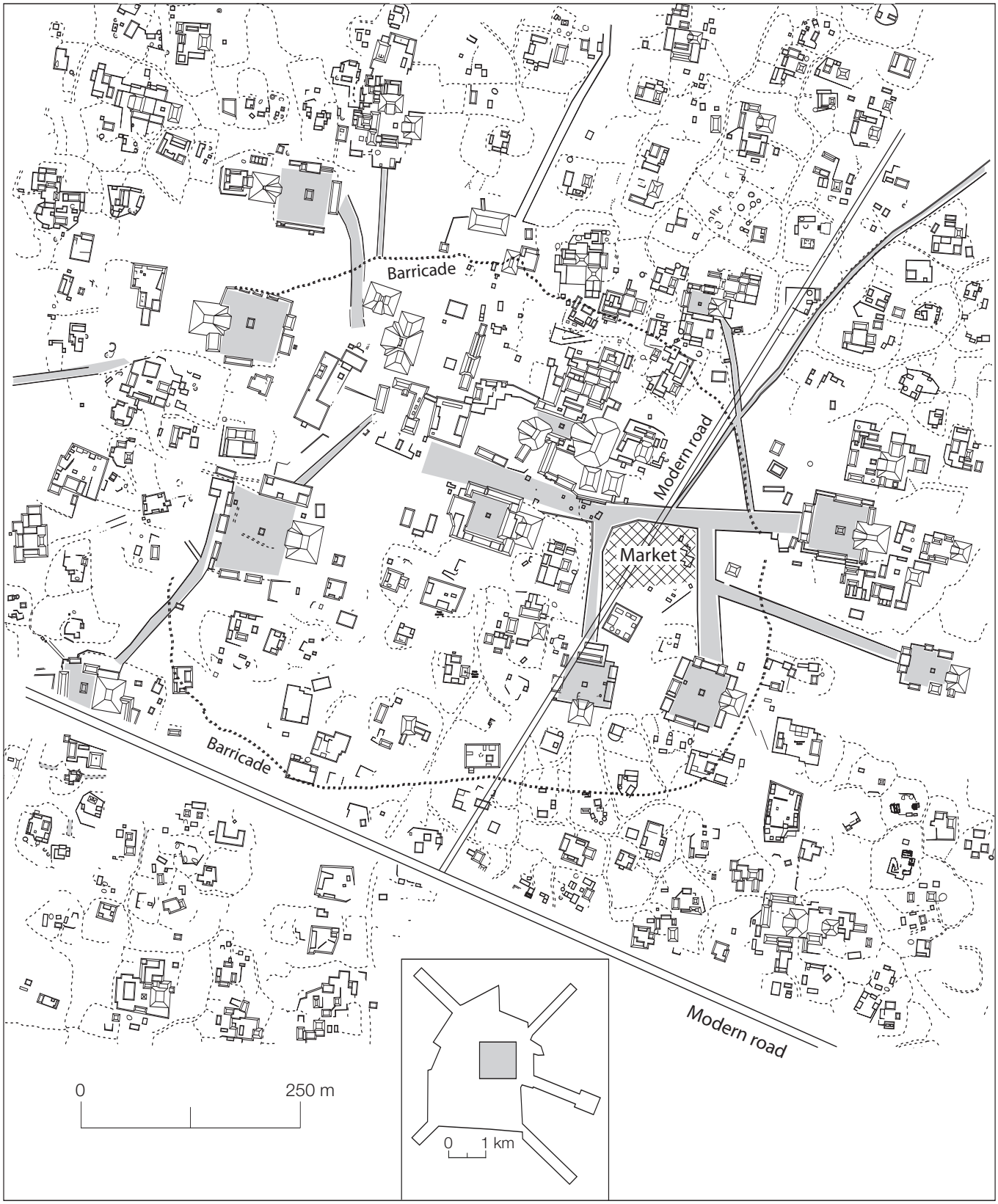

Figure 5. Chunchucmil site center (1 sq km) and portions of the surrounding dense residential zone.

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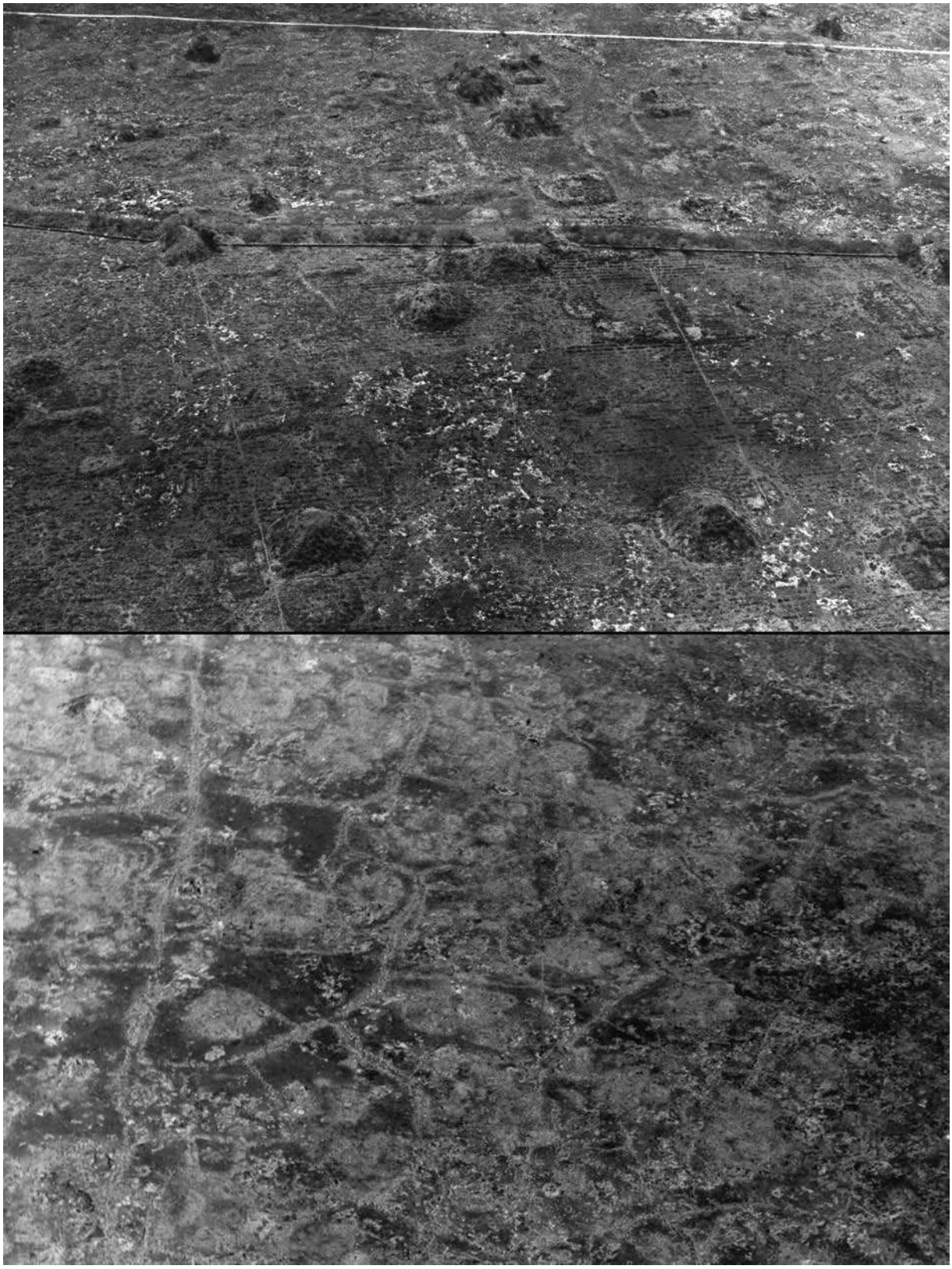

Figure 6. Aerial photographs showing the Chunchucmil site center (top) and a portion of the residential core (bottom).

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Figure 7. Map of Kocholito, located on the edge of the East transect.

of the residential periphery. The final portion (200 m) of the transect, beginning at 2.75 km from the site center datum, has a density of 50 structures per sq km and is therefore beyond the periphery. Though 200 m is a small area for this judgment, informal reconnaissance beyond the edge of the transect revealed very little settlement. In sum, the average radius of the residential periphery, where settlement density drops well below 350 structures per sq km, is 2.33 km. This calculation yields an area of 17 sq km for all three zones of Chunchucmil.

Settlement Fingers

Beyond the first 175 m of the east transect (FIG. 3A), settlement density is 120 structures per sq km. This is twice the density of settlement beyond the residential periphery on the other transects. Settlement density on the east transect remains constant for 1 km until, at 2.35 km from the site center datum, settlement density *increases.* Here, the transect connects with Kocholito (FIG. 7), a cluster of mounds first recorded by the Archaeological Atlas of Yucatan, in the 1970s, as a site (15Q-f-4) separate from Chunchucmil (Garza and Kurjack 1980). Settlement density in this 1 km stretch may represent a corridor, or "finger," of settlement that links Kocholito with the rest of Chunchucmil. Two test pits date a patio group on the western edge of Kocholito to the late part of the Early Classic period, the same period in which Chunchucmil became an urban center. We have no chronology for the core of Kocholito, however, which shows a near absence of two features that dominate Chunchucmil's residential settlement:

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patio groups and albarradas. We are therefore uncertain about linking Kocholito to the rest of Chunchucmil.

A second finger of settlement extends to the southwest and connects to Yokop (not to be confused with the Yo'okop site in Quintana Roo, Mexico), a site first identified by the Atlas project as 15Q-f-39. Satellite imagery and nonsystematic reconnaissance by David Hixson as well as a recent salvage project suggest that the finger runs parallel to, but east of, the southwest transect. Mapping and excavation demonstrate that Yokop, unlike Kocholito, is contemporaneous with Chunchucmil and has both patio groups and albarradas (FIG. 8).

We consider these fingers part of the residential periphery because their settlement density—120 structures per sq km on the east finger—is substantially higher than the normal settlement density found beyond the edge of the periphery: between 39 and 64 structures per sq km. Estimating the area of the fingers is difficult because only one of the two fingers mentioned above has been systematically mapped. There may be a third finger to the northeast of the site, where our mapping coverage is weakest. We estimate that the fingers add between 3 and 8 sq km to Chunchucmil's residential periphery.

Preliminary Population Estimate

Defining the urban center of Chunchucmil as the aggregate of zones 1, 2, and 3 (17 sq km total) and the fingers (3 to 8 sq km), produces a site that covers 20 to 25 sq km (FIG. 9). This figure is remarkably similar to Hixson's estimate using multispectral landsat imagery and aerial photographs between 2003 and 2005. Our preliminary population estimate for this area follows standard procedures (Rice and Culbert 1990) and will be described in detail elsewhere. The estimated number of houses occupied during Chunchucmil's zenith (the late part of the Early Classic) is between 8000 and 8500, depending on the size of the fingers. This yields an estimate of 40,000 to 42,500, assuming five persons per residential structure.

Discussion

In the previous section, we used a drop in settlement density beyond the residential periphery as a marker for the edge of the site. The central principle of this concept of site is based on cultural remains connected by spatial proximity. Dunnell, however, argues that just because two artifacts are near one another this does not mean that they should be combined into a single analytical unit such as a site. The two artifacts may have come into proximity as part of different formation processes and therefore have no functional, behavioral, or chronological relationship to each other. Ignoring these different processes and subsuming the two artifacts into a single analytical unit—a site—would be, in Dunnell's words, "absurd." Regardless, this critique does not apply to Chunchucmil because its formation processes indicate a clear behavioral and chronological relationship. A systematic, representative, 13% excavation sample of the 1250 mapped architectural contexts shows that the vast majority of residences at Chunchucmil belong to the same ceramic period: the Early Classic. Furthermore, the network of causeways and alleyways that integrates most of these architectural contexts suggests not only that they were occupied contemporaneously, but that their inhabitants cooperated in creating a landscape.

Urban Community

Thus, for Chunchucmil, the question that remains is not whether its settlement comprises a site—a semi-integrated unit—but what relation exists between site and community. We consider three notions of community: interactional, functional/economic, and imagined. We begin here with interactional. Robert Redfield defines communities as spatially discrete, small, and homogeneous, sustained by face-to-face interactions (Redfield 1955: 4). Though the outer edge of the residential periphery is spatially discrete, Chunchucmil is neither small nor homogeneous, rendering face-to-face interactions between the tens of thousands of urban dwellers problematic. Thus, the residents of the city did not form a single face-to-face community. It has been observed that a spatially discrete settlement is not always isomorphic with a community (Kolb and Snead 1997: 612). Chunchucmil may have been a loose alliance of politico-economic factions, perhaps one for each of the large quadrangle compounds (Dahlin in press). If each faction represents an integrated social bloc, then the singular term "community" does a poor job of characterizing the social fragmentation within Chunchucmil's three zones.

At the same time, the drop in settlement density at the edge of the site had effects on social relations that could constitute a non-face-to-face community identity. The drop in density from 350 to 60 structures per sq km suggests different intensities of interaction on either side of the threshold: beyond it, residences are diffusely situated, therefore making interpersonal contact less frequent. Within the threshold, houselots have many "next-door" neighbors, implying frequent contact. The higher frequency of interpersonal contact implies a more dense social fabric. We emphasize that this threshold is not a boundary in the formal sense: it is permeable and has no physical marker. Yet the experience of living on one side of it would have been quite different from living on the other. Sharp drops in settlement density are thus more than fodder for etic distinctions. They have a proxemically experienced compo-

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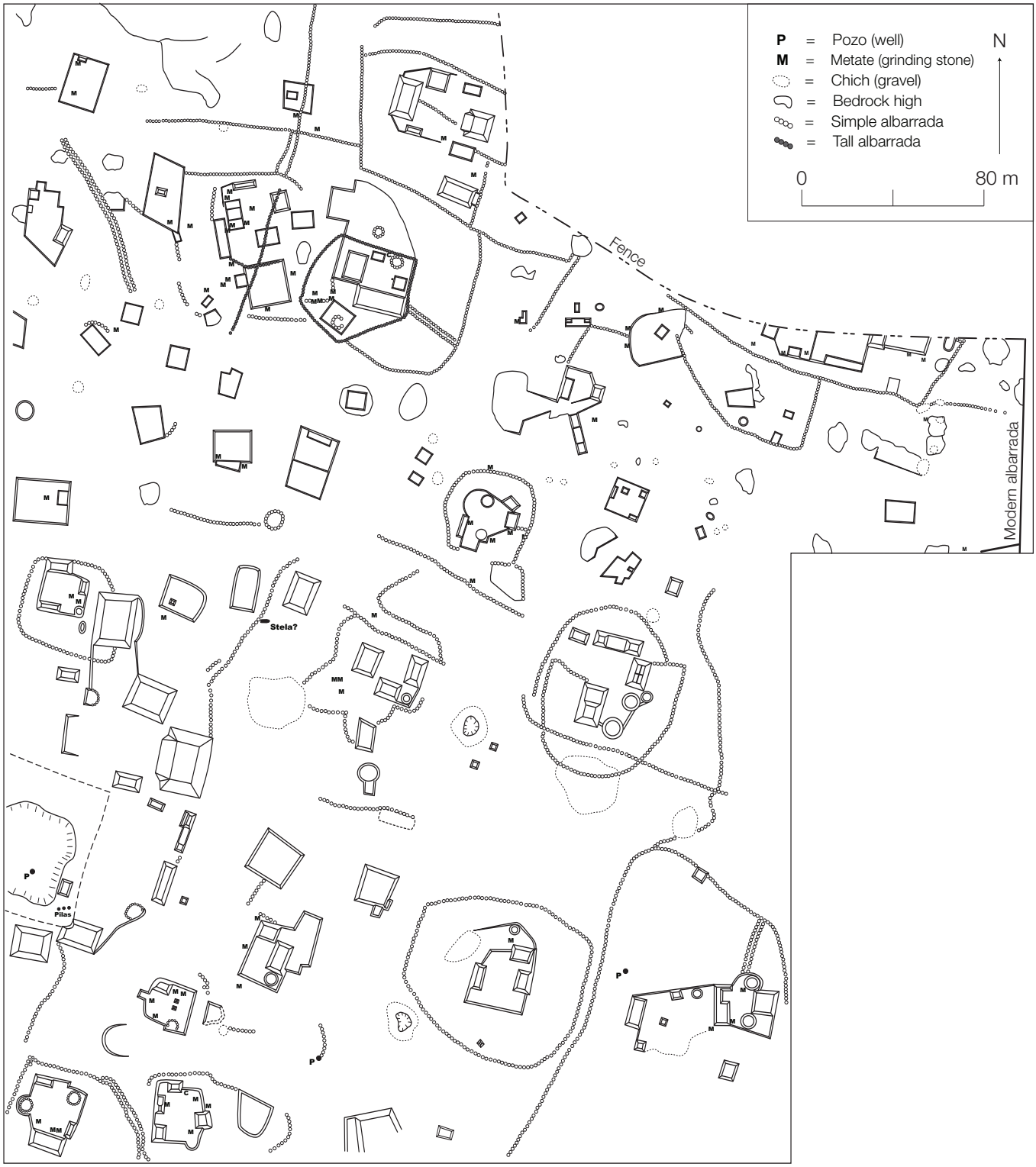

Figure 8. Map of Yokop, located to the southwest of Chunchucmil. North is to the top.

nent shared all across the site. This shared experience may have been the basis for a generalized urban identity (either imagined or understood unconsciously) not found beyond the site.

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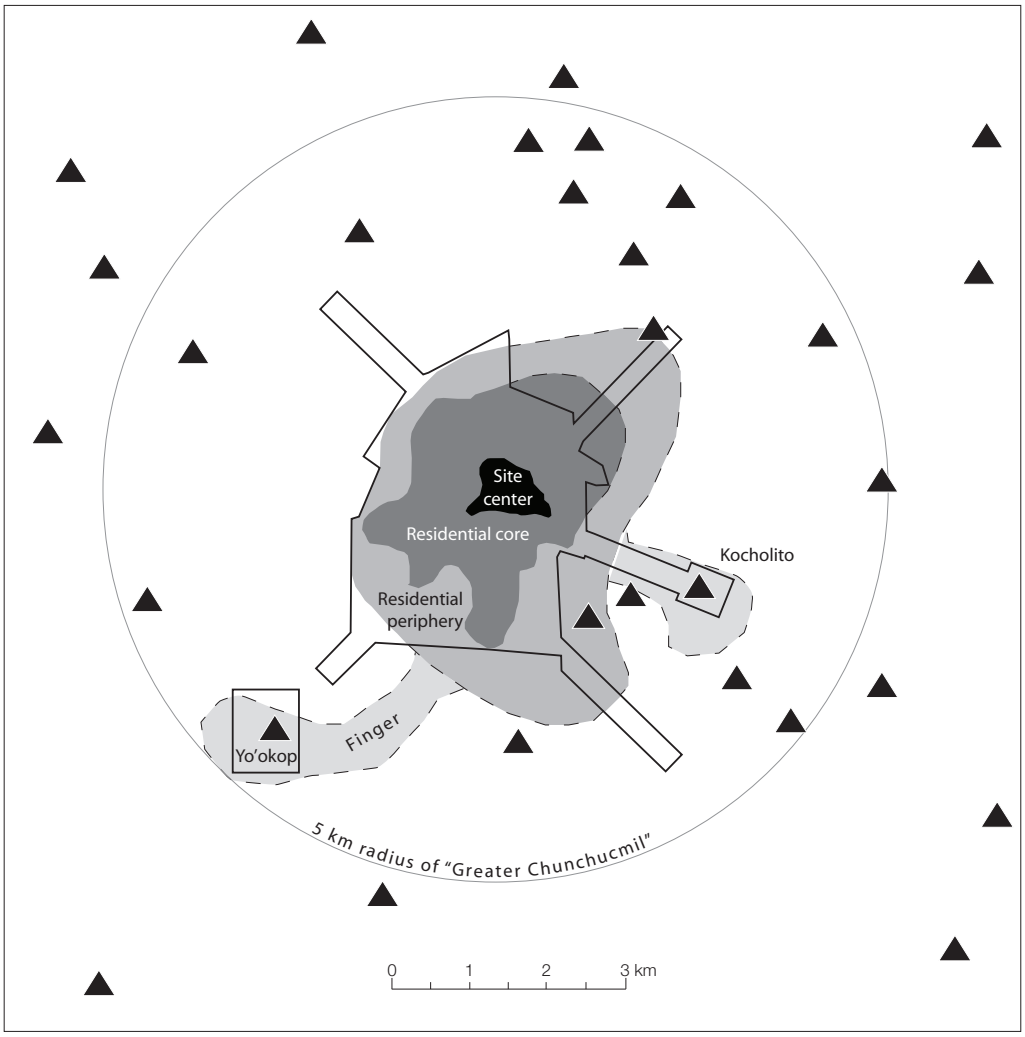

Figure 9. Schematic map of Chunchucmil's settlement zones. Polygons with solid outlines represent areas with 100% mapping coverage. Shapes with dashed outlines represent hypothetical zone boundaries. Triangles indicate sites registered by regional surveys before and during the Pakbeh project.

This conclusion agrees with Matthew Restall's assessment of the Yucatec Maya term *cah,* glossed in colonial documents as town or place. Restall (1997: 20) notes a distinction between the well-defined residential core of the cah and the hinterland that formed the entire territory of the cah. On the contrary, Joyce Marcus (1983; 2000: 235–238) argues that the Maya did not distinguish between city-dwellers and those living in rural outskirts. Rather, the meaningful unit of settlement was the territory ruled by one royal family. On the topic of rulership, we recognize that settlements past the edge of the site (beyond the residential periphery) may have had political relations with Chunchucmil. Recent research on minor centers in rural zones of the Maya area has focused on administrative affiliations with primary centers (Iannone and Connell 2003; see also Bullard 1960). Various sites near Chunchucmil (Yokop [4.5 km to the southwest], San Marcos [4 km to the north], and two sites with ballcourts: Ikmil [4.5 km west], and Abalá [7.5 km north/northeast]) might be considered minor centers with administrative connections to Chunchucmil. Though we cannot address political relations in this paper, our data from Greater Chunchucmil allow us to discuss other forms of affiliation that crossed the boundaries of the site.

Economic Community

Up to this point, we have only brought spatial data to bear upon affiliation between Chunchucmil and low-density settlement at its edge. Getting at the complexity of the issue requires taking into account multiple lines of data. In

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other words, we need to move beyond "distance interaction principles" (Peterson and Drennan 2005) in order to understand what kinds of relationships existed between people (see also Green 1955). For Chunchucmil, we turn to data on houselot walls (albarradas) and obsidian (ceramics have established contemporaneity of settlement, but have thus far not aided in distinguishing communities). Many houselots beyond the bounds of the city are fully enclosed by albarradas identical to those that encircle nearly all houselots within Chunchucmil (FIG. 10A, B). The frequency of houselot walls diminishes, however, beyond a radial distance of 5 km from the site center datum. None of the sites surveyed to the west beyond 5 km have albarradas encircling houselots. Within 5 km to the east of Chunchucmil, 70% of the settlements have albarradas that encircle houselots, whereas only 14% of the sites beyond the 5 km radius have such albarradas. Furthermore, in those settlements beyond the 5 km radius that do have encircling albarradas, the albarradas encircle few of the settlement's patio groups. This pattern contrasts with the dominance of houselots with albarradas within the city of Chunchucmil.

The 5 km radial distance also marks a significant drop in access to obsidian. Beyond this radius to the east of Chunchucmil, a total of 103 test pits (43.4 cu m) at 19 different sites yielded only 7 obsidian artifacts. The obsidian density for these sites is 0.16 artifacts per cu m. In contrast, the density of obsidian recovered from excavations beyond the edge of the city but within 5 km from the site center datum is much greater. In 26 test pits (14.7 cu m) on the transects and at Yokop we recovered 15 obsidian artifacts, for an obsidian density of 1.02 artifacts per cu m. Thus, houselots within the 5 km radius have six times as much obsidian as residences beyond the 5 km radius. We have noted (Dahlin 2003; Dahlin and Ardren 2002) that Chunchucmil's involvement in trade gave its residents relatively abundant obsidian compared to other sites in the northern lowlands. Though the houselots beyond the city but within the 5 km radius had less obsidian than houselots within the city—1.02 artifacts per cu m compared to 3.07 artifacts per cu m—it appears that they had some access to Chunchucmil's trade goods, making them definite participants in Chunchucmil's economic network.

In sum, due to the high frequency of encircling albarradas and greater access to obsidian, some households within 5 km of the site center differed from households beyond 5 km. We use the term "Greater Chunchucmil" to refer to these residences within a 5 km radius of the site center. This term acknowledges the qualitative connections between the dense settlement of the city itself and the dispersed settlement slightly beyond the city. Greater Chunchucmil can be considered the inner part of the hinterland. When combined, the city and greater Chunchucmil cover approximately 64 sq km, though survey and transects suggest that this 64 sq km contained many large pockets without architecture. In addition to economic interaction, people who live close to large centers but not inside them often identify with the center at some level. For example, a resident of Torrance may say they are from Los Angeles when asked by someone unfamiliar with southern California. This brings up our third form of community.

Place in Discontinuous Space: Imagined Community

Greater Chunchucmil itself is not homogeneous. Not all residences in Greater Chunchucmil have albarradas. Those that did have them were expressing a connection with the Chunchucmil core. This is a different kind of connection than participation in economic networks because some houselots in Greater Chunchucmil with access to Chunchucmil's obsidian did not have albarradas. We discuss these albarradas using the concept of imagined community. This allows for investigation of individual practices within landscape research (Ashmore 2003: 9; Cowgill 2004: 525; Smith 2003).

Though Anderson's (1991) treatment of imagined communities focuses on the relatively recent development of nationalism, his ideas are relevant to archaeology (Yaeger and Canuto 2000). For example, Robert Preucel (2000: 73) has attempted to disconnect community from residential patterns and economic networks and instead regard community "as a form of identity discourse created and reproduced by interpretive acts in the public sphere." Imagined communities can also be established non-discursively, through material culture (Joyce and Hendon 2000). In other words, material practices can foster an unstated sense of connection with broader groups, placing people in networks that are at once familiar but at the same time much wider than the set of people they know personally.

We argue that building houselot walls was one such material practice reflecting an imagined community that extended beyond the city to include part of greater Chunchucmil (see also Chase and Chase 2003: 113; Cowgill 2004: 539). We begin by considering why some residences in Greater Chunchucmil have albarrada walls while others do not. At Chunchucmil, the presence of houselot walls does not correlate with houselot size or other architectural features. What purpose might these walls serve? At Cobá, the albarradas most similar to those at Chunchucmil function as houselot boundaries or soil retention features (Fletcher 1983). Erosion is a relatively minor concern at Chunchucmil, yet we have documented

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kitchen gardens within houselots (Hutson et al. 2007). As at Cobá, walls may serve to reiterate whose garden space is whose. In Greater Chunchucmil, space is abundant and there would be no need for stone walls to communicate the edges of one's garden. Indeed, many residential groups lack such walls. Thus, some other explanation is needed for Greater Chunchucmil.

An alternative interpretation of the houselot walls views their construction as a practice which affiliates Greater Chunchucmil residents with those who lived within the city (Yaeger 2000). Since people living beyond the city will meet only a small fraction of the people living within the city, building houselot walls connects the builders to an imagined community. Building walls fuses their own small world to a much wider world in which they feel that they have a place. This interpretation has the advantage of seeing community as a dynamic construct built from the strategic actions of individual people (Ashmore 2003; Preucel 2000: 61; Yaeger and Canuto 2000), though we still must explain why people would have wanted to affiliate themselves with the city. How do they benefit? Of the residential groups test pitted within Greater Chunchucmil, the one not encircled by albarrada walls happens to have the highest obsidian density. Though this is a small sample, these data suggest that building houselot walls did not necessarily ensure greater access to Chunchucmil's exchange system.

Any explanation of houselot wall construction as a practice that connects houselots beyond the city to those within the city must include more than the notion of conscious affiliation for strategic (in this case economic) purposes. Wall construction should also be seen as a re-creation of a sense of place taking shape semi-consciously over time through repetitive, probably unspoken daily routines. In the center of the site, where nearly all houselots have albarrada walls, we have documented the process of houselot fissioning. Perhaps the residential groups with houselot walls in Greater Chunchucmil originally fissioned from household compounds within the city (cf. Chase and Chase 2004: 142). If this is the case, the act of building houselot walls in Greater Chunchucmil could be seen as a way to re-create the kind of landscape that residents were accustomed to within the city before moving to the hinterland. Stated differently, the act could be seen as an unremarkable reproduction of physical layouts attuned to the dispositions inculcated in the builders by their prior experience of living within the site in houselots with walls (Bourdieu 1977; Tuan 1977). At this juncture, we recall Rosemary Joyce and Julia Hendon's (2000: 143) point that "communities are realized in daily routinization of passage through material settings." From this perspective, the construction of houselot walls beyond the city is not just a materialization of *habitus,* it also marks identity. Community identity—being of the city though no longer *in* the city—is created and reinforced by dwelling in bounded houselots, by living in spaces where daily comings and goings are marked by stone walls. These durable dispositions materialize themselves beyond the city when such boundaries—the albarrada walls—are reproduced in a context where they are no longer needed: where their initial purpose—marking garden space—is no longer necessary. The walls thus identify a socialized connection between the city proper and some of those living in Greater Chunchucmil, manifesting a continuity of place across discontinuous space.

Chunchucmil and Maya Urbanism

In this section we contrast Chunchucmil's site structure with that of other large Maya sites, such as Tikal, Dzibilchaltun, Caracol, Cobá, and La Milpa, and suggest explanations for these contrasts. Due to the lack of a dominant monumental core in its site center, Chunchucmil differs sharply from the other sites. Chunchucmil's multiple quadrangles suggest a layout of multiple nuclei (Marcus 1983). Dahlin has argued that this indicates the looser administrative control that may have accompanied Chunchucmil's market-aided economy (Dahlin in press, 2003; Dahlin and Ardren 2002).

Yet Chunchucmil's three major zones of settlement—site center, residential core, and residential periphery—clearly exhibit a concentric layout like that of other urban centers. According to William Haviland (in Puleston 1983: 24–25), Late Classic Tikal has three concentric zones of settlement: the epicenter, dominated by temple pyramids, palaces, and causeways; central Tikal, which consists mostly of dense residential occupation ringing the epicenter; and peripheral Tikal, a less dense residential area. Recent survey along Tikal's earthworks challenges the sharpness of these zones by showing that the outer edges of peripheral Tikal are not as clear as initially proposed (Webster et al. 2007). The three zones at Chunchucmil superficially resemble Tikal's zones, but Chunchucmil's residential zones are far denser than Tikal's. For example, Chunchucmil's residential periphery has a density of 350 structures per sq km compared to 119 per sq km at Tikal, or 197 per sq km when bajos—seasonal swamps—are eliminated. Furthermore, Chunchucmil's residential periphery is not as expansive as Tikal's. Recent research (Webster et al. 2007) suggests that Tikal's periphery is even larger than the traditional estimate of 120 sq km (Culbert et al. 1990; Haviland 1970; Puleston 1974).

Dzibilchaltun's configuration was defined largely by the

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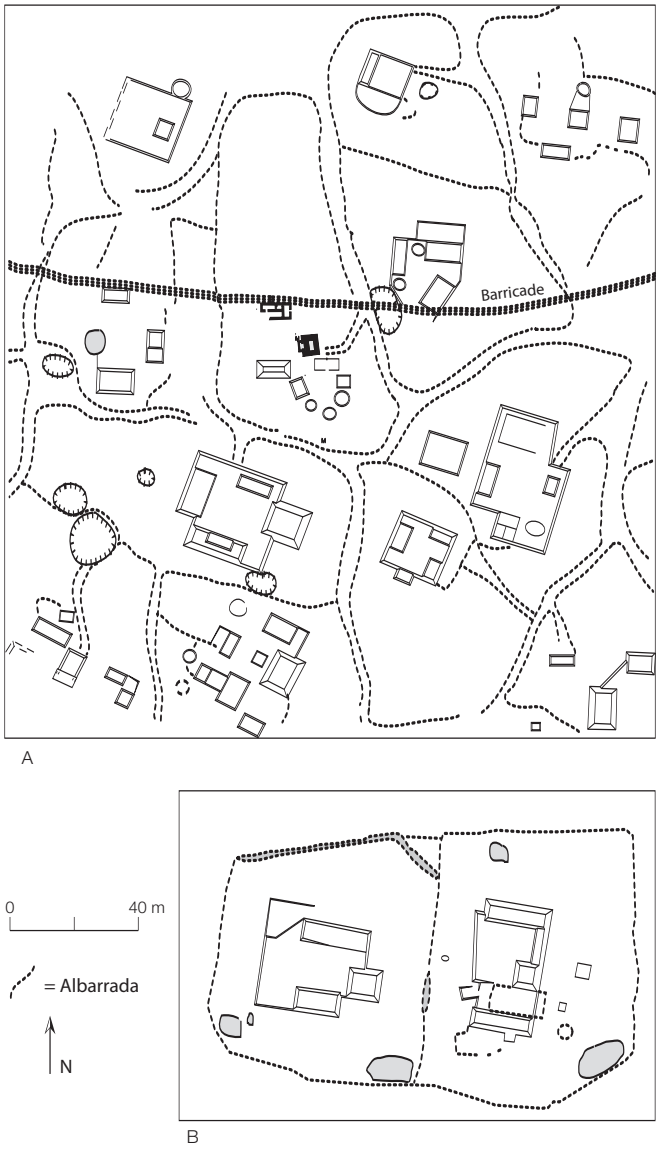

Figure 10. Comparison of A) houselots encircled by albarrada walls within the city of Chunchucmil (visible in south portion of Figure 5); and B) houselots encircled by albarrada walls beyond the city of Chunchucmil, at the site of Kanan, 4.5 km to the north/northeast of Chunchucmil site center datum.

relative numbers of vaulted structures (Kurjack 1979). Its 240 vaulted structures exhibit concentric zonation. A "central group" that fits inside a circle with a diameter of 600 m contains a quarter of all of the vaulted buildings in the site. Dzibilchaltun's central group is within a larger 3 sq km area that contains the site's causeways and much of the rest of the vaulted architecture. Beyond this 3 sq km area lies a random scatter of vaulted buildings, encompassing 16 sq km. A sustaining area, lacking vaulted architecture and not considered part of the Dzibilchaltun site, lies beyond the third zone (Kurjack 1979: 13). Dzibilchaltun's sustaining area is not analogous to Greater Chunchucmil because Kurjack's notion of a sustaining area, covering a full 325 sq km, represents an agricultural catchment. By contrast, Greater Chunchucmil, covering 64 sq km, is not a catchment area (Dahlin et al. 2005); it shares closer ties with Chunchucmil.

The three concentric zones at Dzibilchaltun and Chunchucmil cover the same amount of space: 16 sq km vs. 17 sq km, respectively. When all of the 8398 buildings of Dzibilchaltun's 19 sq km map (Kurjack 1979:1) are taken into consideration, as opposed to just the 240 with vaults, Dzibilchaltun's site structure contrasts markedly with Chunchucmil's, however. At Dzibilchaltun there are no concentric zones beyond the central group. Abrupt drops in settlement density can be found only in some directions from the center, such as the southwest. In other directions, there are fingers of settlement that stretch beyond the mapped area, yet these fingers are much denser than the finger of settlement on the east side of Chunchucmil. Unlike Chunchucmil's fingers, those at Dzibilchaltun do not extend from a clearly concentric core. Indeed, Kurjack (1974: 89) notes that Dzibilchaltun is fragmented into about 30 clusters. Though few clusters are discrete in the sense of being completely surrounded by open space, the maps of Dzibilchaltun (Stuart et al. 1979; see also Kurjack 1974: fig. 24) show a spotty mix of broad vacant areas and dense settlement. The map of Dzibilchaltun has "a fragmented appearance that is not consistent with the general notion of what a nucleated community should be like" (Kurjack 1974: 89; see also Tourtellot 1988 on Seibal).

Sites such as Caracol (Chase and Chase 2003) and La Milpa (Tourtellot, Everson, and Hammond 2003) contrast with both spotty Dzibilchaltun and compact Chunchucmil. They have broad expanses of continuous settlement that confound dichotomies between urban and rural and between center and sustaining area. Residential groups beyond Caracol's epicenter each had 2.5 ha of agricultural land, often with terraces, thus recalling "garden cities" such as Sayil (Dunning 1992). Chunchucmil is too dense to be a garden city; though its houselots had kitchen gardens, the average area available to them is less than 0.4 ha. Chase and Chase (2004: 142) support a concentric layout for Caracol consisting of elites living in palaces in the epicenter, surrounded by a nutritionally-deficient support population, which in turn is surrounded by the residential groups with contiguous agricultural plots.

Cobá, Caracol, and La Milpa have minor centers within their sprawling settlement. Caracol has a ring of impressive administrative plaza groups at the end of causeways

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that extend between 3 and 3.5 km from the epicenter. These terminal plazas would qualify as minor centers if they were not connected to the Caracol epicenter by causeways. Cobá has plazas at the end of causeways extending between 2 and 5 km from the site center. Yet Cobá is more densely occupied than Caracol and La Milpa and, akin to Chunchucmil, it has noticeable thresholds in settlement density to the east (zone II) and west (zone IV) at 2.0 and 2.6 km, respectively, from the main architectural group (Group B) in the site center (Folan, Kintz, and Fletcher 1983). La Milpa also has minor centers spaced at approximately 3 km from the site center, though these are not connected to the site core as at Caracol and Cobá (Tourtellot, Everson, and Hammond 2003). We noted above that minor centers such as Ikmil and Abalá may exist in the hinterland beyond Chunchucmil's residential periphery. Within Chunchucmil, candidates for minor centers include eight architectural groups with large pyramids (between 6 and 9 m high) beyond the site center and not networked to the quadrangles by causeways. However, these groups are all enclosed by albarrada walls much like residential houselots. Albarrada walls do not encircle most quadrangles in the site center. Thus, in contrast to Caracol, La Milpa, and Cobá, Chunchucmil lacked embedded minor centers. This can be explained by Chunchucmil's density and compactness: nearly everyone in the urban center lived within a 3 km radius, therefore close enough to be administered by the polyarchic quadrangles in the site center. It may also be explained by the fact that, unlike these other cities, Chunchucmil lacked a dominant monumental core (Chunchucmil has nothing analogous to Caracol's Caana or Cobá's Group B), and therefore may have had a very different system of government.

In summary, the large Maya centers reviewed here exhibit different site structures (see also Chase and Chase 2003: 117). Though all six sites have, at least vaguely, concentric zones, they differ in several ways. Dzibilchaltun's concentric zones, based on vaulted architecture, reflect status differences. Chunchucmil's concentric zones reflect density differences: houselots with impressive architecture are common in all three zones. Only Caracol is concentric in the original sense proposed by Burgess (Chase and Chase 2003; see also Marcus 1983), involving a low-status inner ring of residences immediately beyond the center.

Chunchucmil's density resembles that of Coba and Dzibilchaltun and sets it apart from southern lowland sites such as Tikal, La Milpa, and Caracol. Yet Chunchucmil differs significantly from its northern neighbors Dzibilchaltun and Cobá. Unlike Chunchucmil, Dzibilchaltun's dense settlement clusters together, while Cobá's causeway system extends much further than Chunchucmil's and integrates far-flung residential neighborhoods through a network of minor centers.

What can be said about isomorphism between city and community? At Tikal, a drop in settlement density—an etic marker of the edge of the city—was once thought to occur at the earthworks—an emic marker of the edge of the community. Recent field research (Webster et al. 2007) refutes this possibility, aligning Tikal more closely with Chunchucmil, where settlement density thresholds are not congruent with the edges of social and economic networks. At Caracol, Chase and Chase (2004) argue for a site-wide identity, based on shared domestic ritual practice. Yet different segments of the society participated in different economic networks. Dzibilchaltun likely had the least developed sense of city identity due to the fragmentation of the residential areas into clusters. In sum, the Chunchucmil case adds to the considerable variability in Maya urban form and how these cities related to their peripheries.

Conclusion

Our research at Chunchucmil adds to broader discussions of the structure of large Maya sites and helps evaluate what the notion of site shares or does not share with the concept of community. Despite the phenomenon of residential dispersion, our data allow us to distinguish the site of Chunchucmil from its hinterland. We argue further that living in the crowded city made for a different social experience than living in this diffuse hinterland. Thus, the ancient Maya may have drawn a distinction, similar to our own etic distinction between city and hinterland, that produced an imagined urban community. Yet other types of communities did not divide at the density threshold defining the site's edge. A different kind of imagined community extended beyond the city's permeable bounds as people of Greater Chunchucmil emulated urban life by building houselot walls, a feature better adapted to crowded living than to the spacious hinterlands in which the walls were reproduced. When moving from density figures and houselot walls to a third line of data—obsidian—altogether different networks of interaction become visible. An economic community detectible by access to obsidian stretched into Greater Chunchucmil but not far beyond it.

The documentation of multiple kinds of community not tethered to site boundaries does not do away with the concept of site, but makes it more complex. It calls into question the meaning of population estimates. Though we give a population estimate for Chunchucmil—up to 42,500 during the late part of the Early Classic—we recognize that this number is one of many different estimates that could be meaningful. Our comparison of Chunchucmil's urban layout to that of other Maya urban centers also reveals the

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limits of the usefulness of this number. On the one hand, comparing population size is useful for getting a sense of the amount of labor or tribute a sovereign could draw upon. On the other hand, the important differences in site layout between Chunchucmil and other Maya urban centers suggest that not all populations were administered in the same ways. Since the mere size of a site can be mistaken for the degree of political centralization, further discussion of variation among large sites may contribute to debates on Maya political organization.

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